Office Action Summary	Application No.	Applicant(s)
	10/595,610	AMARAL REMER ET AL.
	Examiner	Art Unit
	CATHY K. WORLEY	1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 April 2011 and 29 June 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) *4 and 22-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-21 and 31-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 April 2011* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The amendments to the specification filed on June 29, 2011, have been entered. The amendments to the claims filed April 18, 2011, have been entered.

2. Claims 31-33 have been newly added and are drawn to the elected invention.

Claims 1-33 are pending.

Claims 4 and 22-30 are withdrawn.

3. Claims 1-3, 5-21, and 31-33 are examined in the present office action.

Priority

4. The applicant has provided an application data sheet that claims priority to the Brazilian Patent Application: BR PI0305197-8; filed on Nov. 13, 2003, and therefore, priority is extended to Nov. 13, 2003.

Objections and Rejections that are Withdrawn

5. The objection to the drawings is withdrawn in light of the applicant's submission of new drawings that remove the sequence listing from the figures.

6. The objections to the specification for lacking descriptions of the drawings and for lacking sequence identifiers on page 36 are withdrawn in light of the Applicant's amendments to the specification.

7. The objection to the title is withdrawn in light of the Applicant's amendment of the title.

8. The objections to claims 2, 3, and 5-21 are withdrawn in light of the Applicant's amendments to the claims.

9. The rejection of claims 8-11 under 35 U.S.C. 112, second paragraph, is withdrawn in light of the Applicant's amendments to the claims.

Specification

10. The specification is objected to because the hard copy of the sequence listing that was submitted on April 18, 2011, does not match the computer readable copy (CRF) that was submitted on Jan. 30, 2008. The CRF includes the cDNA sequence of AtGRP17 as SEQ ID NO:1 which is 1818 nucleotides in length, and the amino acid sequence of the AtGRP17 protein as SEQ ID NO:2 which is 543 amino acids in length, and the promoter sequence from the AtGRP17 gene as SEQ ID NO:3 which is 1569 nucleotides in length. The hard copy of the sequence listing that was

submitted on April 18, 2011, lists SEQ ID NO:1 as the coding region of AtGRP17 and discloses it to be 1629 base pairs, it discloses the amino acid sequence of the protein with no associated sequence number, it lists SEQ ID NO:2 as the promoter from AtGRP17 and discloses it to be 1658 base pairs, and it SEQ ID NOs: 3 and 4 as primer sequences. Furthermore, there has not been a new CRF submitted to include the new primer sequences that were added.

Applicant is advised submit a new sequence listing that includes all five sequences as they were **ORIGINALLY FILED** and the Applicant must also submit a new computer readable file for all five sequences as they were originally filed. The applicant is cautioned to avoid any new matter.

Claim Objections

11. Claim 31 is objected to because of the following informalities: the current sentence structure suggests that "vertebrates" comprising genetically modified pollen grains. Applicant is advised to amend the claim to insert - - , said product - - between "vertebrates" and "comprising". Appropriate correction is requested.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 31-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. All dependent claims are included in this rejection.

Claim 31 includes the recitation "a promoter sequence of glycine-rich protein gene AtGRP17 of A. thaliana", however, at the time of filing (priority to 2003), AtGRP17 did not have an art-accepted meaning. The Examiner searched GenBank for "AtGRP17", and there were no records prior to 2008 for genes having this designation. For this reason, the term "AtGRP17" cannot be relied upon to give meaning to the claims. The name of a gene or a protein can only be used in a claim if that name had an art-accepted meaning at the time of filing. The Applicant is advised that this particular rejection can be overcome by including the particular sequence that is included in the sequence listing for the promoter of AtGRP17.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-3 and 5-21 remain rejected under 35 U.S.C. 102(b) as being anticipated by Robert et al (WO 99/49063; published on Sept. 30, 1999). The

Applicant's arguments in the response filed on April 18, 2011, were fully considered but were not found to be persuasive.

The claims are directed to a pharmaceutical product comprising at least part of tissues or cells of the male vegetal reproductive system containing heterologous polypeptides.

Robert et al teach the display of peptides or proteins on the surface of a pollen grain for protein production and antigen delivery (see pages 33-36). They teach that recombinant proteins and therapeutics may be expressed in transgenic plants and packaged on intact pollen grains with little process or purification (see page 35, lines 17-19). This pollen is a part of the male vegetal reproduction system and it is a part of an anther. They teach that any protein or peptide now used for the production of vaccines could be utilized this way, and they specifically name canine parvovirus coat protein (see page 35 lines 26-28 and page 34 line 26) which is a eukaryotic antigen and can be used for vaccination of a vertebrate. They also mention tritrpticin, leptin, avidin, interleukin (which can be used for treating allergies and autoimmune diseases), and interferon (which can be used for treating cancer) (see page 34, lines 5-6).

Robert et al specifically teach that the pollen expressing the peptide of interest can be administered orally or nasally to stimulate the mucosal immune system (see page 35, lines 10-11). They teach that it could be administered intradermally, intramuscularly, intraperitoneally, intravenously, subcutaneously,

and nasally (see page 35, lines 25-26), furthermore, the route for administration is an intended use rather than a limitation that changes the form or composition of the pharmaceutical product, therefore, it is not given weight against the prior art. Because the limitations in claims 17-21 are intended use limitations that do not require any change in the actually product, they do not have patentable weight. For example, the pollen grains that are displaying an antigen for use as a vaccine could be also used for an *in vitro* immunoreaction as claimed in claims 17-21.

The Applicant submits that the claims as amended are not anticipated by Robert (see third paragraph on page 12 of the response). This is not persuasive, however, because the amended claims are of the same scope as the previously presented claims.

The Applicant argues that Robert only recites that heterologous polypeptides could be expressed in the corresponding cells, but no single example supports the use of pollen grains as direct vaccination means (see fourth paragraph on page 12 of the response). This is not persuasive, however, because there is no requirement that a prior art reference has an actual reduction to practice. If the prior art reference teaches or suggests the same product and teaches how to make it, there is no need that the prior art reference include an actual reduction to practice to anticipate a claimed invention.

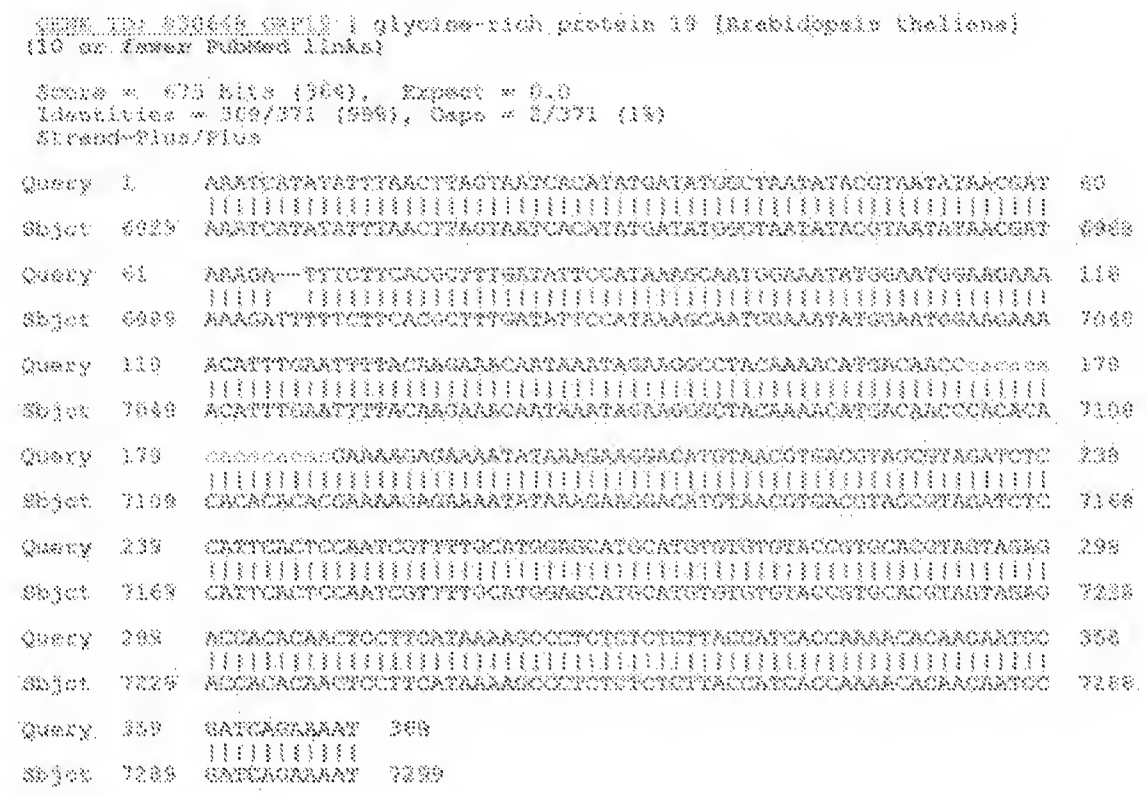
The Applicant argues that new claims 31-33 include the promoter sequence of AtGRP17 (see paragraph bridging pages 12-13 of the response). This is not persuasive, however, because claims 1-3 and 5-21 do not include this limitation.

14. Claims 31-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Robert et al (US Pre-Grant Publication US 2003/0182691; published on Sept. 25, 2003).

The claims are directed to a pharmaceutical product comprising genetically modified pollen grains comprising a promoter sequence of AtGRP17, a coding sequence of a heterologous polypeptide, and a heterologous polypeptide coded by said coding sequence.

Robert et al teach production of polypeptides of interest that are targeted to the surface of pollen grains for antibody or vaccine production (see page 20 paragraph 0264). Polypeptides to be used for immunization or for vaccines are also called "antigens". Robert et al specifically suggest using the Atgrp19 promoter (see sheet 9 of 45 of the figures showing construct ATOG-3). They also suggest using the Atgrp 19 "oleosin-like" sequence by making a translational fusion which would require fusing the coding sequence of the heterologous polypeptide to the coding sequence of the AtGRP protein (see page 17 paragraphs 0238 and 0239; and see Example 24 on page 38).

The Examiner did a BLAST search using the nucleotide sequence from the 3' end of SEQ ID NO:3, which is disclosed as the promoter of AtGRP17, and the following result was returned:



This demonstrates that the gene that is known in the art as AtGRP19 comprises sequences from the polynucleotide disclosed as AtGRP17 in the instant application. For this reason, the constructs taught by Robert that utilize sequences from AtGRP19 anticipate the promoter sequences and coding sequences recited in claims 31 and 32.

Furthermore the recitation of "a" promoter sequence (claim 31) and coding sequence of "an AtGRP17 gene product" (claim 32) are inclusive of small fragments of the AtGRP17 promoter and inclusive of sequences encoding small fragments of the AtGRP17 gene product. There are no limitations in the instant claims 31-33 that exclude the prior art teachings of Robert et al.

15. No claim is allowed.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CATHY K. WORLEY whose telephone number is (571)272-8784. The examiner is on a variable schedule but can normally be reached on M-F 10:00 - 4:00, with additional variable hours before 10:00 and after 4:00 with additional variable hours before 10:00 and after 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg, can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Cathy K. Worley/
Primary Examiner, Art Unit 1638